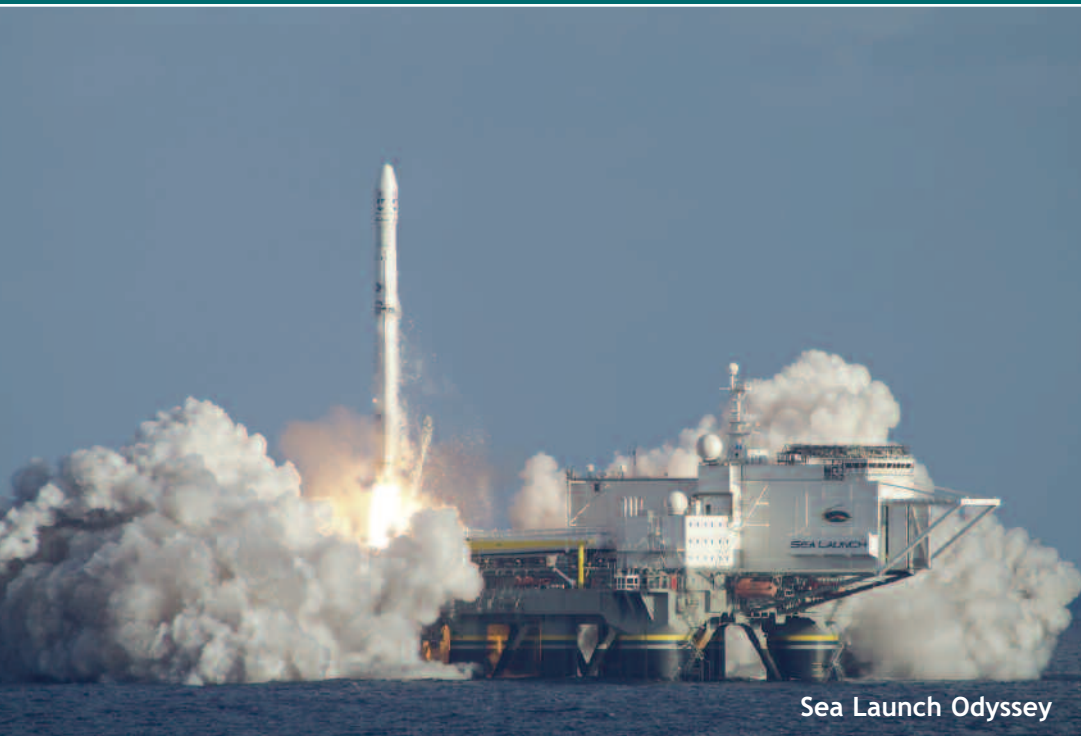




A Leader
In Maritime Technology



Sea Launch Odyssey

Table of Contents

Overview	1
LNG Carriers	4
Floating Units	6
Offshore Platforms	8
Floating Production Units	11
Octabuoy Production Platforms	12
Floating Production Storage and Offloading Vessels	14
Arctic Environment Units	15
Supply and Service Vessels	16

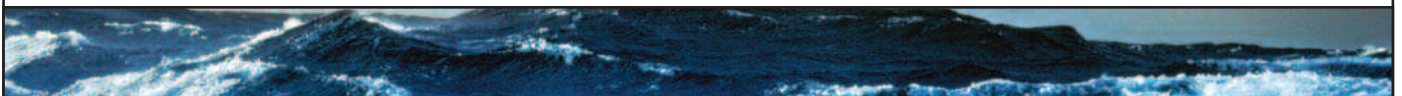




From the beginning of time, the oceans have been a major factor in the evolution of mankind. We depend on the oceans for transport, food, and exploration to harness subsea natural resources.



Today's maritime structures and vessels are robust, well-designed and technically advanced, but the challenges and demands associated with their use have increased in complexity. The need for leading expertise in the maritime industry is as strong as ever.





Stena Don

Moss Maritime provides leading technology, expertise and experience when designing and engineering gas carriers, offshore platforms and special purpose offshore vessels. Moss Maritime's engineering staff is experienced in technical disciplines, such as gas/cryogenics, naval, mechanical, electrical/instrumentation, structural engineering, Health, Safety, and Environment (HSE), and project development.

Some of the largest and most advanced semi-submersible drilling platforms are designed by Moss Maritime.

A wide variety of LNG and LPG carriers, drilling platforms, shuttle tankers, and anchor-handling/tug/supply vessels for offshore oil and gas production are part of the company's portfolio.

Moss Maritime is a pioneer in the development of gas carriers for LNG, LPG and ethylene. Since its introduc-

tion in 1973, the Moss spherical containment system has been the world's leading seaborne transportation system for LNG. The new generation of large LNG carriers with slow-speed diesel propulsion are fitted with the patented Moss Reliquefaction System. This unique in-house LNG expertise is used to develop new concepts for floating receiving terminals and production units for LNG.

A Leader in Maritime Technology

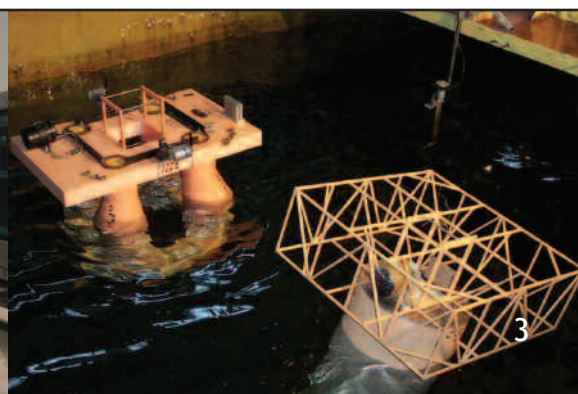
LNG Sokoto

Moss Maritime has a unique reference list:

- 115 LNG Carriers
- 31 LNG Reliquefaction Systems
- 1 LNG Regasification System
- 4 Floating Storage Regasification Units (FSRU)
- Floating LNG Liquefaction Units (FLNG): Concept developments
- 100+ LPG and Chemical Carriers
- 22 Semi Platforms for Drilling, Production and various applications
- 82 Well Service and Supply Vessels
- 5 Diving Support Vessels
- 5 Ice Breakers
- 1 Core Drilling Vessel
- 100+ Conversion/Upgrading Projects
- 2500+ Single Projects (design/engineering/evaluations and size assessments) for the Offshore and Shipping Industry

Moss Maritime's wide product spectrum includes such designs as:

- Octabuoy Deep Draft Production and Drilling Unit
- Moss Catamaran Semi-submersibles (CS-series)
- Moss Well Service Platforms
- Bingo, Yatzy, Vision, and ME 4500 Semi-submersible Platforms
- Moss Class of Anchor Handling/Tug/Supply Vessels
- Moss Spherical Containment Systems for LNG Carriers
- Moss LPG/Ethylene and Chemical Carriers
- Moss Reliquefaction System for LNG Carriers
- Moss Floating LNG Production and Receiving Terminals
- Moss Regasification System for LNG Carriers and FSRUs
- Sea Launch
- SeaBase™



Moss®

LNG

Carriers



Energy Frontier

Moss LNG Carriers

The Moss LNG carrier features the Moss spherical LNG tanks, which are the safest and most reliable LNG containment system on the market. The spherical tank offers simplicity in fabrication and operation and, after more than 35 years of operation, the Moss LNG tank design remains unmatched in terms of operational reliability.

The simplicity of the spherical shape of the Moss LNG tank gives high accuracy for predicted stresses and fatigue life of all parts of the tank structure, thereby eliminating the need for a full secondary barrier.

Thanks to the spherical shape of the LNG tank, there are no restrictions in tank filling level, making both existing and new Moss LNG tanks superior to other LNG containment systems.

Moss LNG tanks are independent self-supporting tanks, meaning they do not form a part of the ship's hull strength and are not affected by possible damage to the ship's hull.

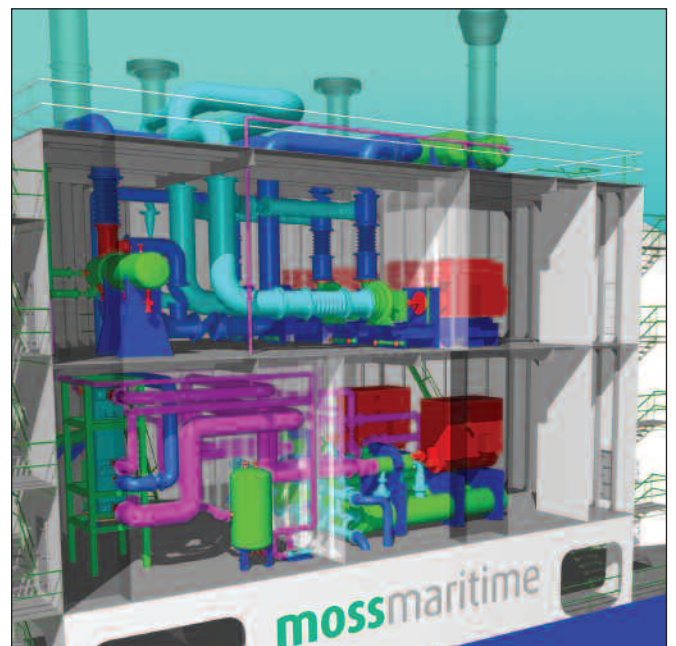
- Tank volumes: 147,000 – 270,000 m³
- 4-5 spherical tanks per LNG carrier
- Service speed: 19.5 – 22.0 knots
- Propulsion: Slow-speed diesel engines, steam turbines, dual-fuel diesel electric or combined-cycle gas turbines, with single or twin screw

Moss Reliquefaction System

The Moss Reliquefaction System ensures that all cargo is preserved during voyage. This gives added flexibility in terms of using slow speed diesel engines as propulsion.

The Moss system features:

- Closed nitrogen expansion cycle that extracts heat from the boil-off gas
- Partial liquefaction and separation of non-condensable products, which means reduced power demand
- Simple capacity control, based on adjustment of the nitrogen cycle pressure
- Easily fitted in cargo machinery room



MOSS

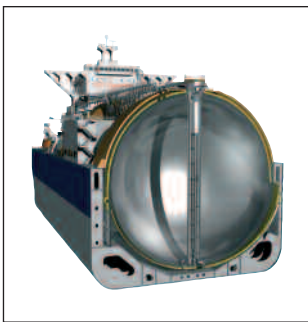
LNG

Tank

Design



Arctic Princess



Moss LNG Tanks

The Moss LNG tank is the industry reference for seaborne LNG transportation. The design is unmatched in reliability, and, since its introduction in 1973, more than 5000 tank-years are recorded with no leaks or failures. The tank design features:

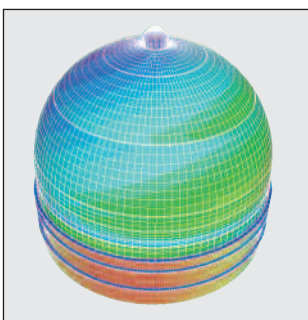
- Robust aluminum tank structure, therefore there is no need for full secondary barrier
- The tank is independent from the hull structure, which means increased safety in case of grounding/ship impacts
- Sloshing is not an issue, therefore any filling level in the tank is generally acceptable



Sloshing - not an issue

The Moss LNG tank is ideal for partial loadings. The spherical shape ensures that partial loadings will not cause problems with sloshing, which means that there are no filling restrictions in the LNG tanks. These features make the Moss LNG tanks ideal for:

- Carriers of all sizes
- Safe loading/discharging at terminals exposed to waves, without need for trans-shipment between tanks
- Partial cargoes/spot trades
- Storage tanks for offshore floating LNG terminals (liquefaction & regasification); conversion or new build



Robust, Flexible, and Reliable

Other important features of the Moss LNG tank are:

- Maintenance-free cargo tank structure
- Easy and quick stripping of tank
- Emergency pressure discharge in case of pump failure
- Within the tank hold space there is easy visual inspection of the insulation and the inner hull at any time
- Moss LNG tanks have an unbeaten failure-free track record

Moss

LNG

Regasification

Units



Moss Floating Storage and Regasification Units (FSRUs)

The Moss FSRU was developed based on experience gained from close to 35 years in the design of Moss LNG carriers. The Moss FSRU builds on the success of the Moss LNG carrier, using the same technology for LNG storage and proven industry technology for LNG regasification.

A Moss LNG carrier can easily be equipped with a regasification plant, providing regasification onboard the LNG carrier, enabling the carrier to deliver high pressure gas directly to consumers onshore. The offshore Moss FSRU is a continuation of this technology, including facilities, LNG loading, and subsea gas export system.

Existing Moss LNG carriers are well suited for conversion into FSRUs, thanks to the long design life of the LNG tanks and the fact that sloshing is not an issue for the Moss LNG containment system. The regasification plant can easily be fitted on the main deck of the LNG carrier, and the LNG loading system and gas export system are easily retrofitted for jetty and offshore applications.

Moss Maritime has prepared the conceptual evaluations and detail engineering for the world's first FSRU conversion for Golar LNG/Petrobras (the "Golar Spirit"), which is fitted with the Moss Regasification System.

The Moss FSRU features:

- The Moss LNG containment system
- The Moss Regasification System, which is available with a wide capacity range and is based on proven technology
- Significant cost reduction compared to onshore facilities; short project completion time
- Wide range of gas send-out capacities, using open or closed loop regasification
- LNG loading in side-by-side mode or via jetty
- Turret or spread-moored anchor line arrangements for offshore applications
- New build or based on conversion of existing Moss LNG carriers



Moss

LNG

Regasification

System

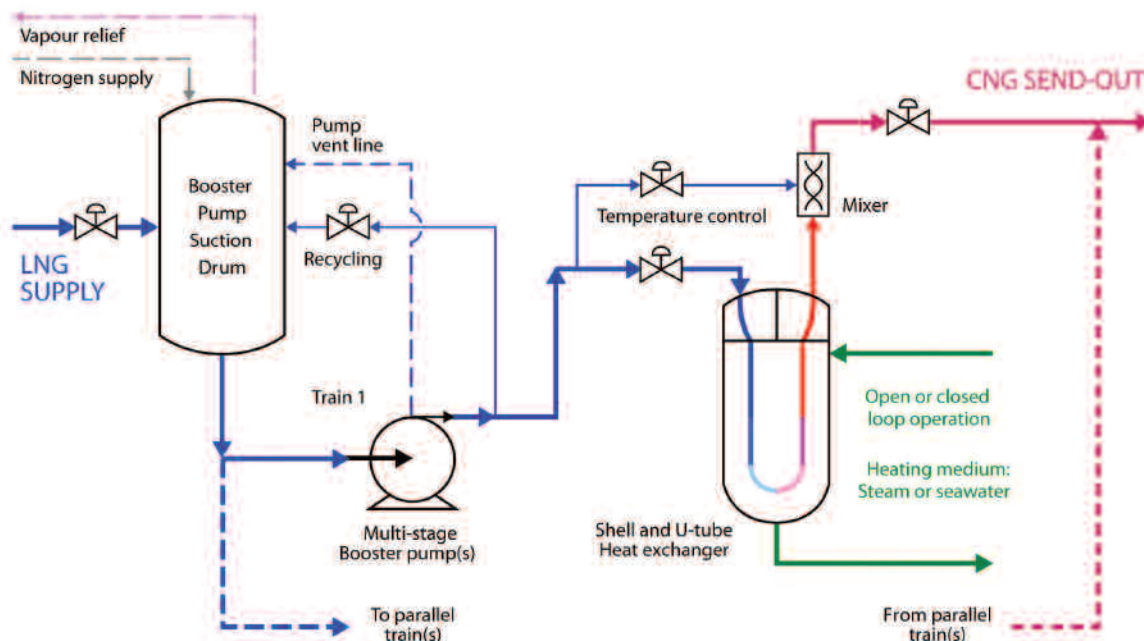
Moss Regasification System

The Moss Regasification System is designed for installation on either a purpose-built Floating Storage and Regasification Unit (FSRU), an existing LNG Carrier converted into an FSRU or on a LNG Regasification Vessel.

The regasification equipment is arranged in parallel trains, assembled as separate modules, or the whole plant can be built in one module to fit to the available space. Each train consists of one or two LNG booster pumps and one shell and tube heat exchanger. The booster pumps are fed by a common LNG buffer tank.

The Moss Regasification System can be designed for open or closed loop operation, and the heating medium for LNG vaporization can either be sea water or steam. The system can be designed to match any requirements to flow and pressure.

The Moss Regasification System was selected for the world's first FSRU conversion, for Golar LNG/Petrobras (the "Golar Spirit").



Moss LNG Regasification Flow Diagram

Moss Offshore Platforms

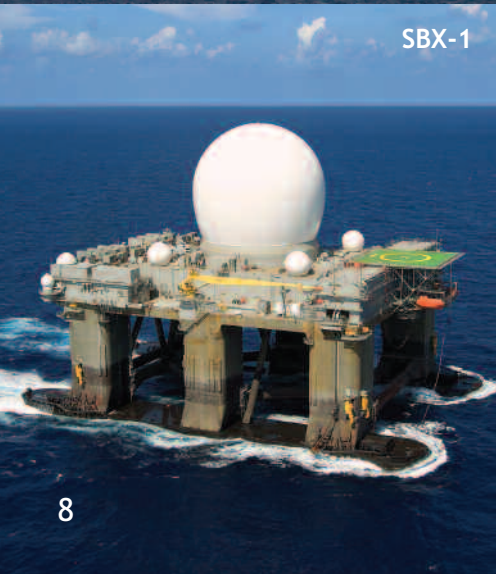


Scarabeo 5

Sea Launch Odyssey



SBX-1



Platforms

Moss Maritime has been involved in the design, construction, and commissioning of some of the most advanced semi-submersible platforms and special purpose vessels built for the oil and gas industry for more than three decades.

We provide the following services:

- Conceptual design of different sizes and types of platforms/new development
- New-building, rebuilding, refurbishment, and surveillance
- Mooring analysis
- Stability analysis
- Riser analysis
- Motion analysis
- Structural strength analysis
- Project management/construction support
- Upgrade/refurbishment engineering



Omega

The unique and one-of-a-kind project for Sea Launch and the special purpose platform SBX-1 were undertaken and developed utilizing

Moss Maritime's maritime technology, experience, and skilled naval architecture, maritime engineering, and project management resources.

Moss Offshore Platforms



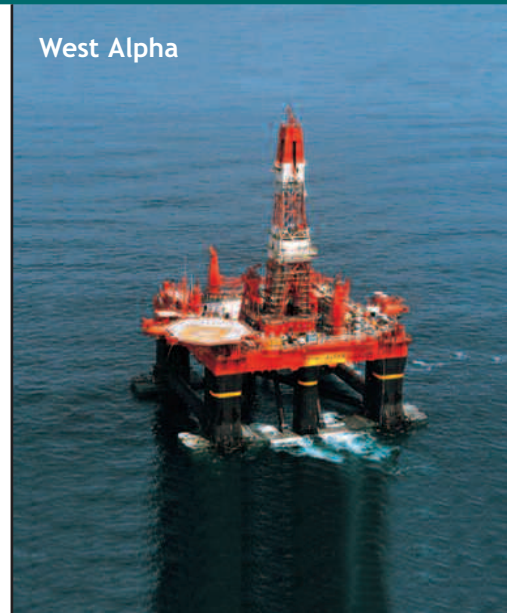
West Venture

Catamaran Semi-submersible Platforms - reference list

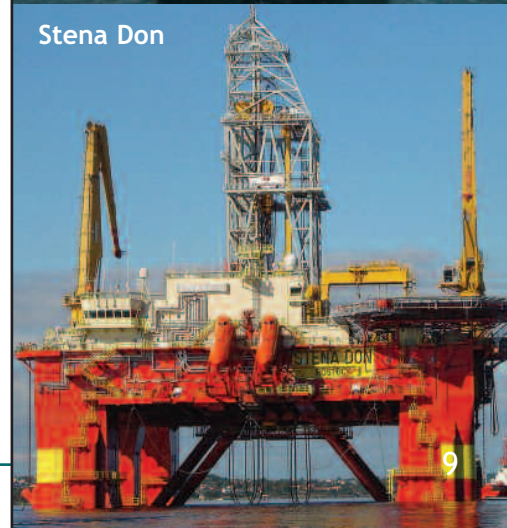
22 semi-submersible platforms designed by Moss Maritime have been built or are currently under construction:

Bingo class	(5) platforms
Super Yatzy	Ocean Yatzy
Ultra Yatzy	West Alpha
Vision	Veslefrikk B
ME 4500	Scarabeo 5
Pacesetter reconstruction	Petrobras 26
Pacesetter reconstruction	Noble Clyde Boudreau
Ocean Odyssey reconstruction	Sea Launch Odyssey
Moss CS50	West Venture
Moss CS30	Stena Don
Moss CS50	SBX-1
Moss CS50 MkII	West Phoenix
Moss CS50 MkII	West Eminence
Moss CS50 MkII	Scarabeo 8
Moss CS50 MkII	Oban B
Moss CS50 MkII	Thalisker
Moss CS50 MkII	TBN (Gazflot)
Moss CS50 MkII	TBN (Gazflot)

West Alpha



Stena Don



Moss Offshore Platforms



CS50 MkII West Phoenix

Moss CS-series

The Moss CS-series of catamaran platforms has over the last 20 years established itself as one of the most built and successful platform designs ever. The CS-series comprises a range of sizes from the smaller of 25,000 tons displacement to the (so far) largest of 60,000 tons displacement.

The CS-series of designs share the common features such as; flexibility, ruggedness and excellent motion characteristics. Field proven in the harshest of environments, the CS designs guarantee a long life with top performance.

The CS- series comprise platforms for a variety of requirements and the structural layout of the lower hull allows alternative configurations of the deck arrangement and installations.

The CS50 and CS60 were primarily developed for DP operations in ultra deep water and harsh environment with requirement for dual activity and high capacity drilling systems. The smaller CS30 and CS40 were developed with lighter equipment working in shallow to medium deep water either as a DP platform or anchor moored.

Well Service Platforms

The Ocean Yatzy was the first multi-service platform to be built purely depending on DP for position keeping. The layout and drill floor solutions were developed for maximum flexibility with regard to handling of sub-sea equipment. The latest CS30 Well service/drilling platform incorporates features from this platform and has been further developed in close co-operation with major well service companies for optimal handling and deployment of coil tubing and other types of well intervention equipment.

CS30



CS50



CS60





Moss Floating Production Units

Moss Maritime - An Experienced Floating Production Vessel Designer

Moss Maritime has over 35 years of experience in the design and engineering of floating production units.

Successful milestones include the first FPU in the Norwegian sector of the North Sea and in 2008 the first deep draft dry tree semi-submersible floating production platform.

Moss Maritime continues to develop innovative and cost-effective solution designs for the oil and gas industry.

Octabuoy SDM



Cidade de Vitoria



Octabuoy
Classic



Petrobras P26



Arctic FPU



Veslefrikk B

Berge Helene - Chinguetti



Moss

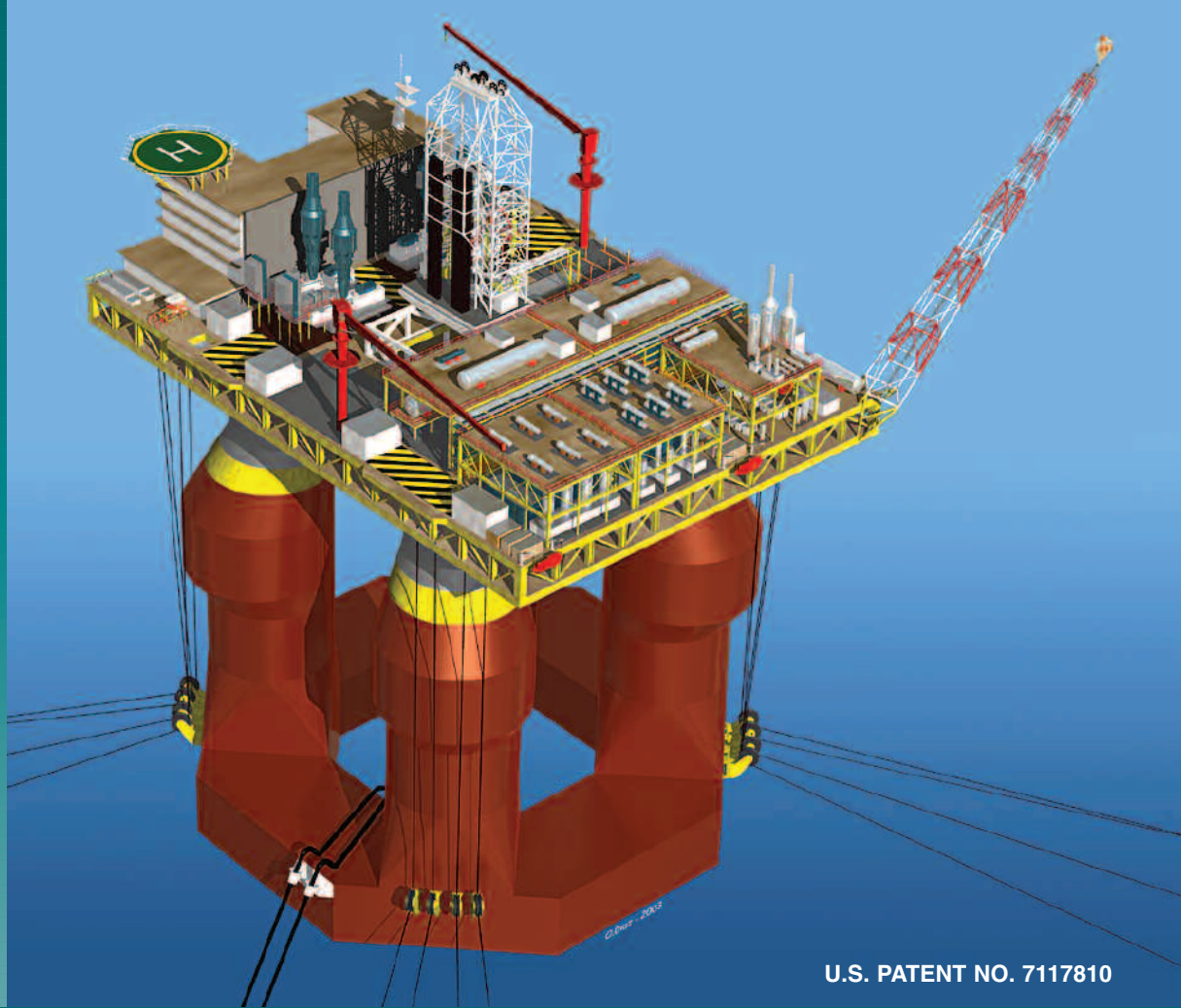
Krylov

Octabuoy®

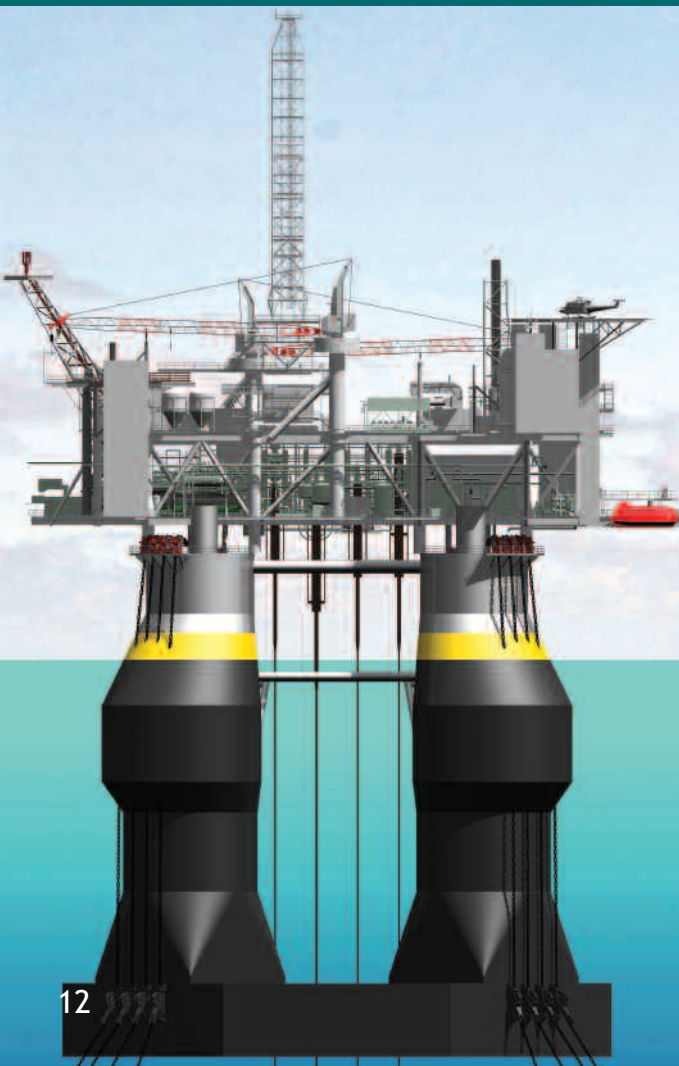
Classic

Deep Draft

Floater



U.S. PATENT NO. 7117810



Octabuoy Classic Semi-submersible

The Octabuoy Classic is the ultimate semi-submersible able to serve as a dry tree unit even in harsh environmental conditions and to accommodate complete drilling facilities. It evolved from three decades of semi-submersible platform experience and is based on proven principles and technology. It is a deep draft floater, featuring a design suited specifically for dry wellheads and SCRs (steel catenary risers) and is a superior alternative to SPARs and TLPs.

The Octabuoy Classic

- Displays superior motion characteristics verified through extensive model testing and analytical calculations
- Is based on a design and conventional ship-building methodologies
- Offers flexibility in the selection of riser configurations
- Offers drilling and workover options
- Offers oil storage in hull
- Uses efficient conventional installation methods
- Features flexibility of the deck structure, which makes it very suitable for sub-contracting of major components and for provisions for a large local content.
- Can be integrated quayside
- Can be relocated and re-used for several field applications

References:

- The first Octabuoy Classic has been sold to an independent operator
- Multiple field specific studies, conceptual screening studies, pre-FEED studies and bids.



Octabuoy SDM

The Octabuoy SDM (Shallow Draft Mooring assisted) is a member of the Moss Maritime Octabuoy family of production floaters. Based on proven semi-submersible design technology, it is a novel combination of established fabrication methods.

The Octabuoy SDM production floater is a “normal” draft semi-submersible. Its hull shape and specially tuned mooring system ensure improved heave motion characteristics when compared to conventional semi-submersibles. It was introduced to the market after years of extensive quantitative analysis and model testing work which verified and validated its maturity, viability, and cost-effectiveness for field developments in the Gulf of Mexico, Brazil, Far East and West Africa. The Octabuoy SDM is also the result of extensive dialogue with fabrication yards and installation contractors which ensured optimal fabrication, assembly, engineering and installation methods.

The Octabuoy SDM

- Is flexible and scalable for future field expansions
- Produces a minimum of vortex induced motions/vibrations (VIMs/VIVs)
- Provides superior motions for steel catenary risers or wet/dry tree applications, for both large and marginal fields
- Features deck and topsides which can be integrated with the hull at the shipyard, and allow superior topside carrying capacity
- Offers drilling and workover options
- Utilizes efficient and conventional fabrication and installation methods, ensuring a competitive cost



Moss
Octabuoy
SDM
Floating
Production
Unit

Floating Production and Storage Offloading Vessels



FPSOs

Moss Maritime has designed its own FPSO hulls and delivered engineering services to numerous FPSO projects, both new built and conversion.

Moss FPSO expertise includes all marine disciplines such as hull design, structural analysis, mooring system design, offloading systems, marine hull systems, process utility systems, piping arrangements, and safety.

FPSO References:

- Gimboa for Sonangol - Hull conversion engineering for Saipem Leased FPSOs
- Cidade de Vittoria for Petrobras - Mooring system design, and model test specification/ follow-up for Saipem Leased FPSOs
- Berge Helene, Berge Charlotte, Berge Hus, Berge Arrow, Berge Frost for BW offshore - Structural/system/piping design and arrangements
- Petrojarl Foinaven for PGS production - Structural design
- Petrojarl Varg - Reinforcement/conversion analysis for other fields
- Petrojarl Banff - Assistance for modifications to reduce roll motions
- Multipurpose tankers for Statoil - Basic design

Moss Floating LNG Liquefaction Units (FLNG)

The Moss FLNG was developed based on experience gained from close to 35 years in the design of Moss LNG carriers. The Moss FLNG builds on the success of the Moss LNG carrier, using the same technology for LNG storage and proven industry technology for gas processing/liquefaction and offloading.



Arctic LNG Plant



Arctic LNG Carrier



Moss 828 MISV

Moss Breaking Ice and New Areas of Operation

Moss Maritime has a range of products that suits the challenging requirements of the Arctic environment. The arctic environment floaters are exposed to extremes; low temperatures, extensive snow precipitation, icing and the impact of ice floes. With the Arctic as a close neighbor and area of business, the Moss team has gained the experience to design floaters with ice-breaking and survival capabilities to withstand the impact of the Arctic extremes. Moss has designed 5 icebreakers operating under Arctic conditions.

The Moss Arctic technology comprises:

- Drilling platforms for Arctic environment
- Icebreaking FPSO
- Icebreakers
- Icebreaking LNG Carriers
- Gravity base barges



CS50 MKII



Arctic FPSO

Arctic Environment Units

Moss Supply and Service Vessels



Moss 501 AHTS

Vessel Versatility

For over 35 years Moss Maritime has developed a variety of support and service vessels for the oil and gas industry. Our product line includes anchor handling/tug/supply (AHTS) vessels, platform supply vessels (PSV), well intervention vessels, diving support vessels, oceanographic research vessels, cable layers, and pipe layers.

For development of the Arctic offshore (e.g., Beaufort Sea, Barents Sea, Sakhalin) Moss Maritime developed the 800 series (808, 818, 828) of specialized ice-breaking offshore support vessels, including both anchor handling and supply functions, as well as facilities for oil recovery, ice escort, diving and rescue operations.

Moss Maritime is independent from any equipment suppliers and can therefore offer to tailor make the design based on the customer's selection of equipment.

Today more than 85 different vessels of Moss design have been built or are under construction.

Moss 808-ICE AHTS



Moss 404 AHTS



Moss 909 AHTS



Moss 424 AHTS



Moss 828 MISV





SeaBase™

Maritime Technology of Tomorrow





Moss Maritime

A leader in maritime technology

More than 35 years of experience in the design of a variety of ships and offshore platforms

Contact Information

www.mossw.com

Moss Maritime a.s
Lysaker Torg 8
P.O. Box 120
1325 Lysaker
Norway
Tel. +47 67 52 62 50
Fax +47 67 52 62 98/99

Moss Maritime Inc.
15950 Park Row
Houston, Texas 77084
USA
Tel. +1 281 552 5900
Fax +1 281 552 5919

mossmaritime



Saipem